DESCRIPTION

The AM7423 is available in DFN8(3.3x3.3) package.

ORDERING INFORMATION

Package Type	Part Number	
DFN8 (3.3x3.3)	J8	AM7423J8R
		AM7423J8VR
Note	V: Halogen free Package R: Tape & Reel SPQ: 3,000pcs/ Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

FEATURES

- -20V/-95A,
  $R_{DS(ON)}$ = 3.6mΩ(max.) @ V_{GS} =-10V
  $R_{DS(ON)}$ = 4.6mΩ(max.) @ V_{GS} =-4.5V
  $R_{DS(ON)}$ = 7mΩ(max.) @ V_{GS} =-2.5V
  $R_{DS(ON)}$ = 10mΩ(max.) @ V_{GS} =-1.8V
- HBM ESD protection level of 2.3kV typical
- 100% UIS + R_G Tested
- Reliable and Rugged

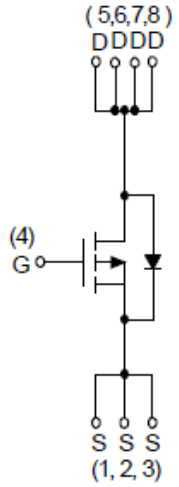
Note: The diode connected between the gate and source serves only as protection against ESD. No gate overvoltage rating is implied.

- Available in DFN8(3.3x3.3) package.

APPLICATION

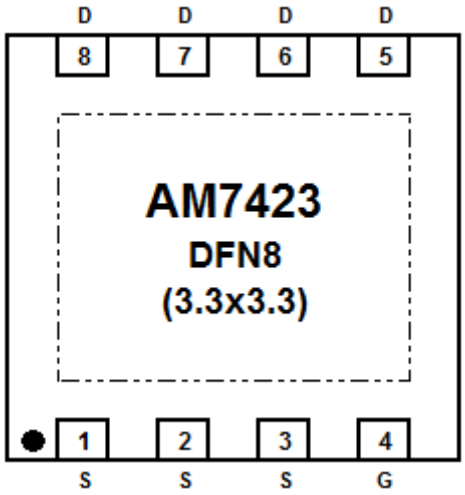
- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

PIN DESCRIPTION



P-Channel MOSFET

PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless Otherwise Noted

V_{DSS}, Drain-Source Voltage		-20V
V_{GSS}, Gate-Source Voltage		±12V
I_D[NOTE1], Continuous Drain Current (V_{GS}=-4.5V)	T_A=25°C	-25A
	T_A=70°C	-20A
I_{DM}[NOTE1], Pulsed Drain Current (V_{GS}=-4.5V)		-100 *
I_D[NOTE3], Continuous Drain Current	T_C=25°C	-95A
	T_C=100°C	-60A
I_S[NOTE1], Diode Continuous Forward Current		-50A
T_J, Maximum Junction Temperature		150°C
I_{AS}[NOTE4], Avalanche Current, Single pulse	L=0.5mH	-22A
E_{AS}[NOTE4], Avalanche Energy, Single pulse	L=0.5mH	121mJ
T_{STG}, Storage Temperature Range		-55°C~ 150°C
P_D[NOTE1], Maximum Power Dissipation	T_A=25°C	4.2W
	T_A=70°C	2.7W
P_D[NOTE3], Maximum Power Dissipation	T_C=25°C	62.5W
	T_C=100°C	25W
$R_{\theta JA}$[NOE1,2], Thermal Resistance-Junction to Ambient	t ≤ 10s	30°C/W
	Steady State	70°C/W
$R_{\theta JC}$[NOTE3], Thermal Resistance-Junction to Case		2°C/W

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

NOTE *: Package limited.

NOTE1: Surface Mounted on 1in^2 pad area, t ≤ 10sec.

NOTE2: Maximum under Steady State conditions is 75 °C/W.

NOTE3: The power dissipation P_D is based on $T_{J(MAX)}$ = 150°C, and it is useful for reducing junction-to-case thermal resistance ($R_{\theta JC}$) when additional heat sink is used.

NOTE4: UIS tested and pulse width limited by maximum junction temperature 150oC (initial temperature T_J=25°C).

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless Otherwise Noted

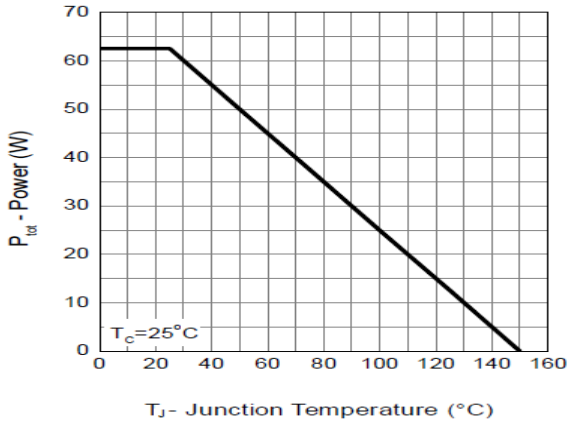
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_{DS}=-250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-16V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=-250μA	-0.4	-	-0.9	V
Gate Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
Drain-Source On-state Resistance	$R_{DS(ON)}$ NOTE5	V_{GS}=-10V, I_{DS}=-20A	-	3	3.6	mΩ
		V_{GS}=-4.5V, I_{DS}=-20A	-	3.6	4.6	
		V_{GS}=-2.5V, I_{DS}=-20A	-	4.9	7	
		V_{GS}=-1.8V, I_{DS}=-10A	-	7	10	
Diode Characteristics						
Diode Forward Voltage	V_{SD}NOTE5	I_{SD}=-1A, V_{GS}=0V	-	-0.5	-1.0	V
Reverse Recovery Time	t_{rr}NOTE6	I_{SD}=-20A, dI_{SD}/dt=100A/μs	-	33	-	ns
Reverse Recovery Charge	Q_{rr}NOTE6		-	17	-	nC
Dynamic CharacteristicsNOTE6						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-10V, Frequency=1.0MHz	-	5360	-	pF
Output Capacitance	C_{oss}		-	1030	-	
Reverse Transfer Capacitance	C_{rss}		-	820	-	
Gate Resistance	R_G	V_{GS}=0V, V_{DS}=0V,F=1MHz	-	3	-	Ω
Turn-on Delay Time	$t_{d(ON)}$	V_{DD}=-10V, R_L=10Ω, I_{DS}=-1A, V_{GEN}=-4.5V, R_G=6Ω	-	19	-	ns
Turn-on Rise Time	t_r		-	25	-	
Turn-off Delay Time	$t_{d(OFF)}$		-	228	-	
Turn-off Fall Time	t_f		-	72	-	
Gate Charge CharacteristicsNOTE6						
Total Gate Charge	Q_g	V_{DS}=-10V, V_{GS}=-4.5V, I_{DS}=-20A	-	54	-	nC
Gate-Source Charge	Q_{gs}		-	4.1	-	
Gate-Drain Charge	Q_{gd}		-	17	-	

NOTE5: Pulse test; pulse width≤300μs, duty cycle≤2%.

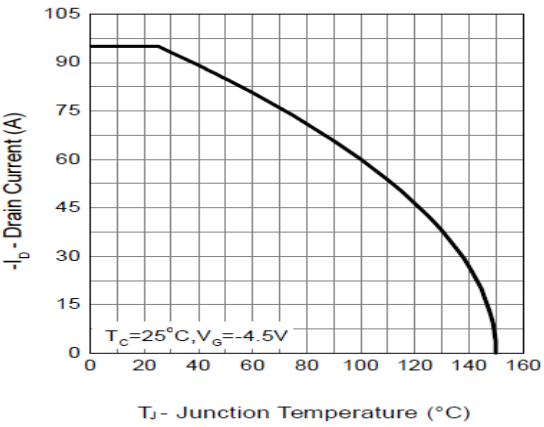
NOTE6: Guaranteed by design, not subject to production testing.

TYPICAL PERFORMANCE CHARACTERISTICS

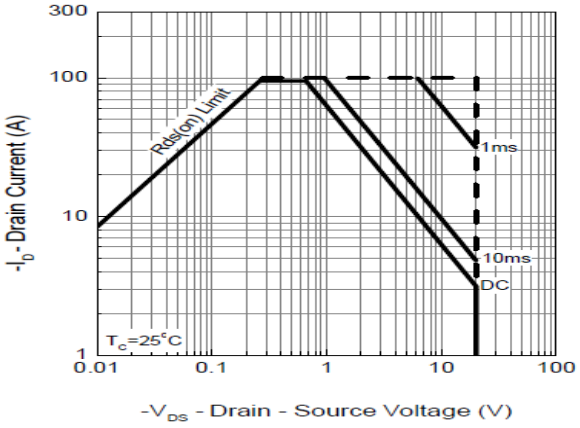
1. Power Dissipation



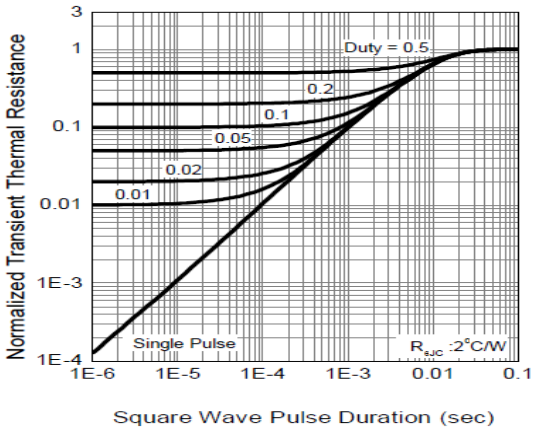
2. Drain Current



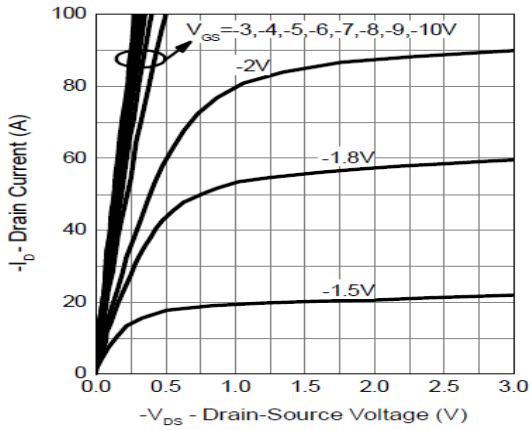
3. Safe Operation Area



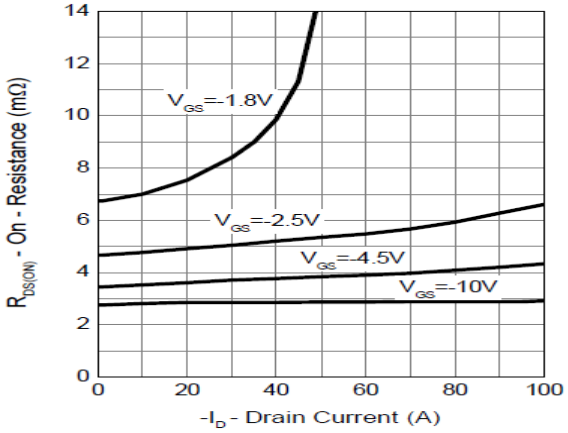
4. Thermal Transient Impedance



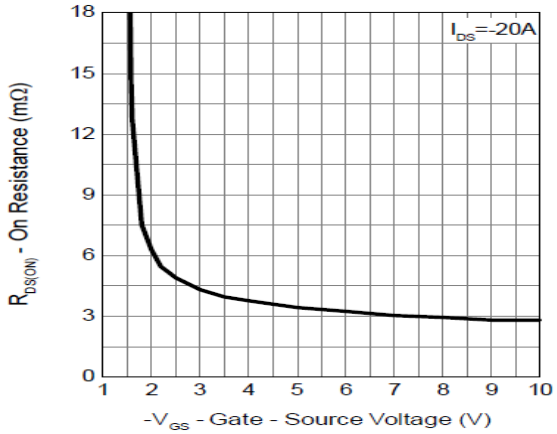
5. Output Characteristics



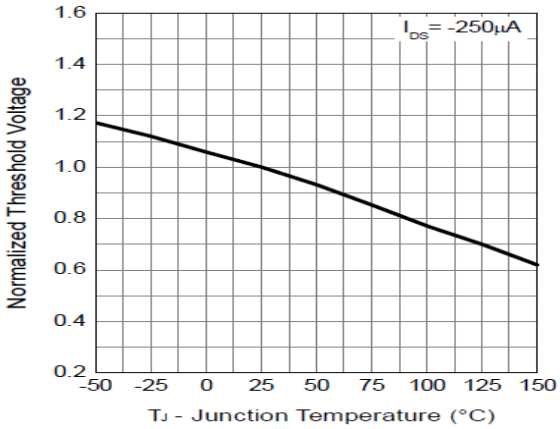
6. Drain-Source On Resistance



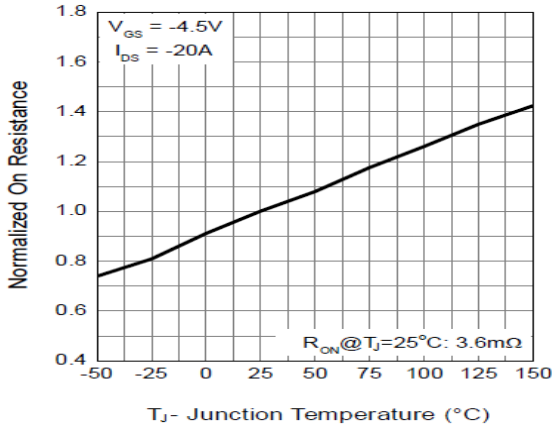
7. Gate-Source On Resistance



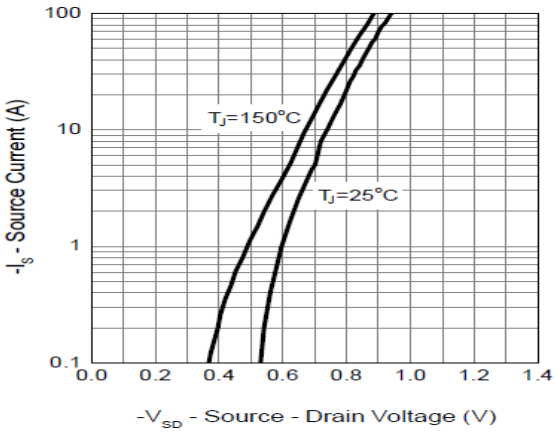
8. Gate Threshold Voltage



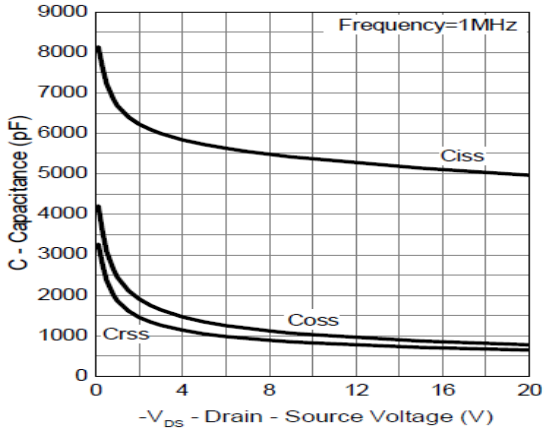
9. Drain-Source On Resistance



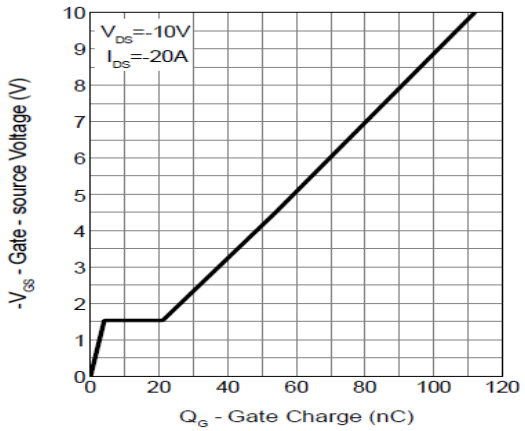
10. Source-Drain Diode Forward



11. Capacitance

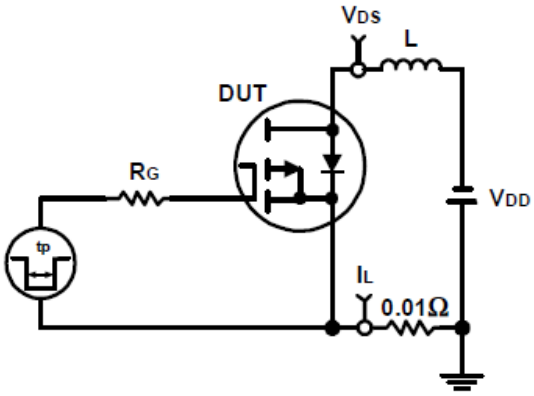


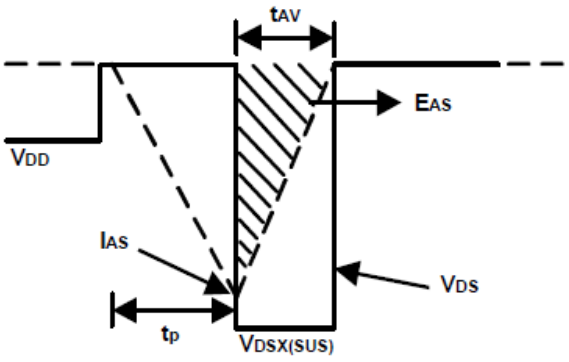
12. Gate Charge



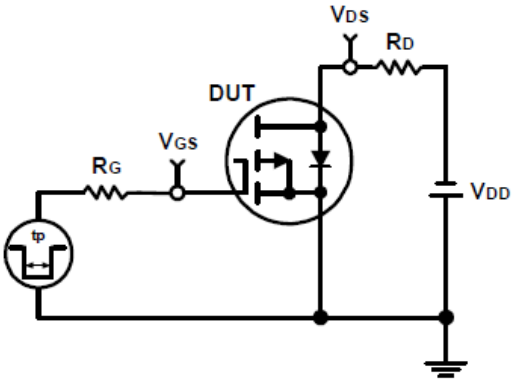
DETAILED INFORMATION

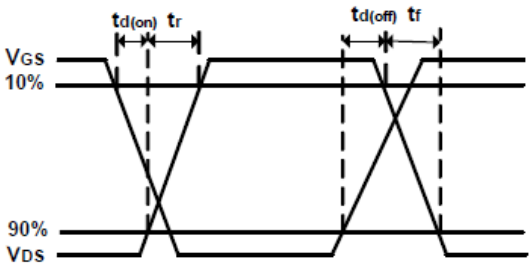
Avalanche Test Circuit and Waveforms





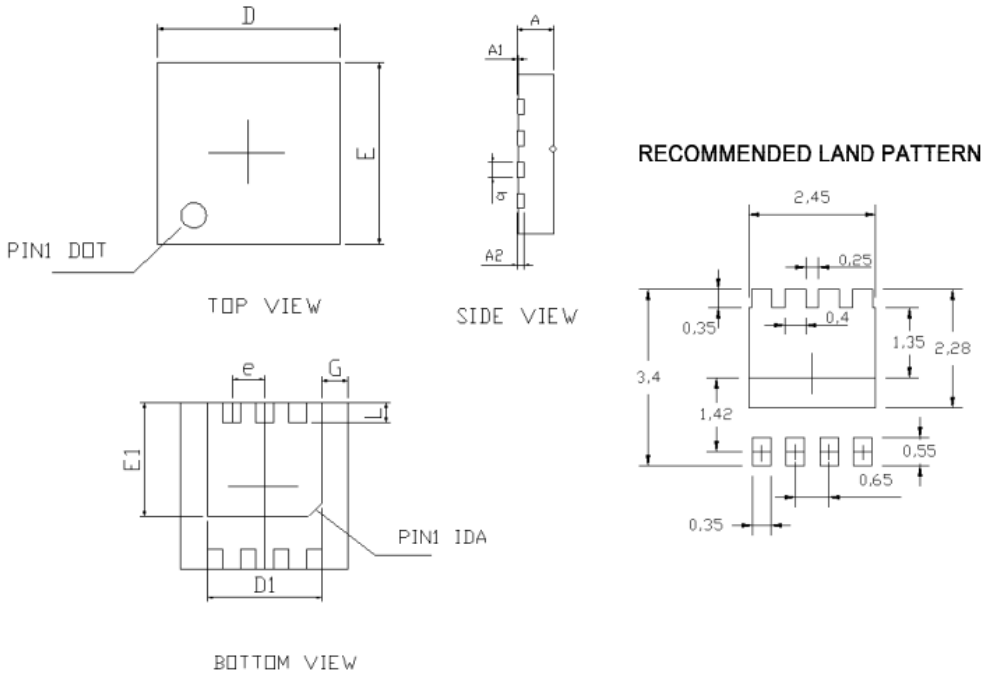
Switching Time Test Circuit and Waveforms





PACKAGE INFORMATION

Dimension in DFN8 (Unit: mm)



Symbol	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.032
A1	0.000	0.050	0.000	0.002
A2	0.100	0.250	0.004	0.010
b	0.240	0.350	0.009	0.014
D	3.150	3.400	0.124	0.134
D1	2.100	2.350	0.083	0.093
E	3.150	3.400	0.124	0.134
E1	2.150	2.350	0.850	0.093
e	0.600	0.700	0.024	0.028
G	0.475	0.575	0.019	0.023
L	0.350	0.450	0.014	0.018

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